

The Acari of the Swedish South Polar Expedition.

By

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With 3 Plates and 56 Text-Figures.

Although a considerable part of the collections of Acari made by this expedition were lost through the shipwreck of the »Antarctic» still fortunately the most valuable part of them — from a zoogeographical point of view — viz. the collections made in the true Antarctic region, were safely brought home. They prove to be by far the most exhaustive collections yet made in those regions, numbering not less than 21 species, of which most are new to science. Unfortunately several of the new species are only represented by a single specimen, and these are not even fullgrown, a fact which has, in some instances, rendered it impossible to identify the genera with absolute certainty.

Professor E. TROUËSSART of Paris and Mr. A. D. MICHAEL of Dorset, England, have very kindly sent me the type specimens of some of the antarctic and subantarctic Acari described by them and have thus enabled me to identify these with absolute certainty, and I beg to tender them my best thanks for their kindness.

The collections were made in 17 different localities, distributed as follows.

Antarctic Region.

1. South-Shetland Islands. Nelson Island, under stones, in a pool. 11th. Jan., 1902.
2. » » » » in mossturf. 11th. Jan. 1902.
3. On a penguin-islet in Orléans Strait (Gerlache Channel), amongst lichens under stones. 12th. Jan., 1902.
4. Cape Roquemaurel, on the NW coast of Graham Land, in damp sand. 14th. Jan., 1902.
5. Paulet Island, in wet moss. 15th. Jan., 1902.
6. On an islet in Orléans Strait, in a nest of *Phalacrocorax atriceps*.

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7. Moss-Island in Orléans Strait (Gerlache Channel). 1st Dec., 1902.
8. Mont Bransfield in the northern part of Graham Land, in moss. 7th. Dec., 1902.
9. » » » » » » » » under stones. » » »

Subantarctic region.

10. Falkland Islands, Port Louis. 25th. July, 1902.
11. » » Speed-well cove. 15th. March, 1902.
12. » » East of Port Stanley, under stones. 25th. Febr., 1902.
13. » » Port Darwin. 3rd. March, 1902.
14. Tierra del Fuego. Observatory Island, near Staaten Island. 6th. Jan., 1902.
15. » » » Gable Island in the Beagle Channel, under stones on the shore. 29th. Oct., 1902.
16. South-Georgia. Antarctic Bay, under stones in a pool. 5th. March. 1902.
17. » » Cumberland Bay. Bon's valley, on the rocks. 2nd May, 1902.

Heterogamasus nov. gen.

Dorsal side covered by two shields, shaped like those of the genus *Zercon*.

Texture of shields and legs coarsely granulated. Mandibles with free, straight, needle-shaped calcar.

Legs I long, shaped like those of the genus *Epicrius*, with two large bristles each on the ventral side of femur, genu, tibia and tarsus.

Legs II thick, with calcar femoralis and processus genualis. ♂ Sternal shield fused with ventri-anal shield.

1. *Heterogamasus claviger* nov. spec.

(Pl. I, figs. 1—3, 6 & 8. text-figs. 1, 2.)

Male. Length, 0,54 mm. Breadth, 0,38 mm.

Shape, pyriform, subtriangular, the greatest width far backward, a little behind coxæ IV; the sides convex, between coxæ II and III falling off towards the narrow squared top; the hind margin rounded, in the middle slightly square.

Colour, light yellow. *Texture*, roughly granulated.

The *dorsal side* (Pl. I, fig. 8) covered by two shields, which are of the shape typical in the genus *Zercon*. The shields leave unprotected a narrow band along

the sides and a small triangular space at the front. The *anterior shield* is the largest, subtriangular with convex sides; the greatest width is near the postero-lateral angles; at the front well rounded; the square hind edge covers the front margin of the posterior shield. The *posterior shield* is subquadrangular with slightly convex sides and rounded angles; the hind margin is contiguous with the hind margin of the body; the greatest width is at the antero-lateral angles.

Both shields are coarsely reticulated by irregular, raised ridges, which leave shallow, depressed spaces between them; even in these spaces there are granulations. The ridges and the depressed spaces are differently shaped in the two shields. On the anterior shield the depressed spaces are, especially in the central part of it, more or less rounded and the ridges are broad and smooth; the markings are arranged symmetrically to the sagittal axis.

On the posterior shield the ridges are narrow and arranged concentrically round a point situated in the middle, near the front margin; the spaces between the ridges are polygonal and the ridges show a strongly undulated outline.

On the unprotected parts of the dorsal side there are also irregular ridges which are generally arranged more or less parallel to the sides. The cuticle is in these parts finely concentrically striated.

The hairs (Pl. I, fig. 2) are thick, clavate, slightly curved with 4—5 longitudinal ridges. 5 pairs are much larger than the others; they are arranged as follows: one pair, the largest, is flat and pointed at the tip, directed forward and situated at the anterior end of the body, on a pair of tubercles; one pair at the anterior end of the anterior shield, two pairs at the sides of the anterior shield in its posterior half, and one pair at the hind margin of the posterior shield. The situation of the other hairs is shown in Pl. I, fig. 8.

Ventral side. Tritosternum. Of this I have not been able to see distinctly the shape; the trunk seems to be 3 times as long as it is broad and almost cylindrical.

No *jugular shield*.

Sternal shield is narrow and not reticulated, but finely punctured, weak, and fused with the ventri-anal shield; 4 pairs of hairs, one near the anterior margin, one on the inner side of coxæ II and two on the inner side of coxæ III.

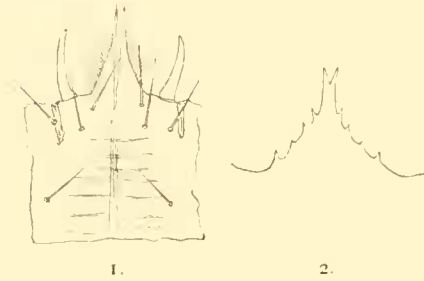
Genital aperture large, inserted in an incision of the anterior margin of the sternal shield.

Ventri-anal shield very large round, covering the whole belly behind coxæ IV except for a narrow band along the lateral margin, reticulated like the posterior dorsal shield; 4 pairs of fine hairs of ordinary shape on the ventral portion and 4 pairs of rather large, clavate hairs on the anal portion.

Anal aperture situated near the hind margin of the shield.

Stigmata situated behind *coxæ* IV; *peritremata* long, extending closely along the outer side of the *coxæ* and very nearly meeting on the dorsal side above the pseudocapitulum.

The *legs*. The legs long, the first pair measuring 0.72 mm, the 3rd 0.53, and the 4th 0.53 mm.



Heterogamasus claviger. TGDH.

Fig. 1. Hypostoma 150 ×. Fig. 2. Epistoma 150 ×.

The cuticle coarsely granulated by short irregular, raised ridges arranged transversally. Legs I (Pl. I. fig. 1): coxa and trochanter with fine hairs of ordinary shape; femur, genu, tibia and tarsus on the dorsal, exterior and interior side with short clavate hairs, generally inserted in small tubercles; on the ventral side they are provided with two straight bristles each, situated in the middle and at the same level, one directed obliquely outward, the other inward;

on the ventral side of the tarsus about 6 sharp bristles and on the dorsal side at the end a bundle of fine sense hairs of which 3—4 are longer than the others. Femur with small, distinctly demarcated basifemur. Telfemur and genu of equal length, a little shorter than the tibia and the narrow, slightly curved tarsus, which are also both of equal length; no basitarsus.

Claws and caruncle very small.

Legs II (Pl. I, fig. 3) thick, with long, narrow, horn-shaped *calcar femoralis*; no *processus axillaris*, only a sharp bristle inserted in a small tubercle; *processus genualis* rather long, sharply pointed, directed obliquely forward; on the outer side of the femur far back one large, clavate hair, on the ventral side of the tibia in the middle one bristle and on the ventral side of the tarsus 4 straight bristles; other hairs clavate. Distinct basitarsus.

Legs III and IV with long tarsi, gradually narrowing towards the end; basitarsi long, measuring more than $\frac{1}{3}$ of the whole length of the tarsi.

Ambulacres with bilobated caruncle and two subunguinal, narrow slips.

Epistoma (Text-figure 2) short, triangular, with slightly convex edges, projecting in a short narrow, cylindrical spine, bifurcated at the top; the edges with 4—5 sharp teeth.

Styli present, rather long and narrow.

Hypostoma (Text-figure 1) three pairs of the hypostomatic hairs situated near the front margin; maxillary lobes single-jointed, rather long and narrow and only slightly curved.

The *mandibles* (Pl. I, fig. 6); the lower jaw curved at right angles at the end, with large, sharply pointed terminal tooth; the ventral edge of the jaw concave;

one small tooth in the middle. Calcar mandibuli rather broad. of even width for the greater part of its length, at the end pointed and curved slightly upward; exactly as long as the upper jaw.

The upper jaw a little longer than the lower one, not so strongly curved at the end; in the distal half three small teeth, increasing in length towards the back; the posterior one opposite to the middle tooth of the lower jaw.

To judge from the shape of its mandibles and the 2nd pair of legs, the present genus is most closely related to *Gamasellus* BERL.; but on the other hand the shape and the texture of its dorsal shields are features, only to be met with in other subfamilies of the Parasitidæ, and the shape of the first pair of legs is a quite unparallelled feature.

Locality: No. 12. One male.

2. *Trachygamasus*(?) *Ohlini* nov. spec.

(Pl. II, fig. 17. Pl. III, fig. 9, text-figs. 3—10.)

This species will most probably prove to be the type of a new genus. As, however, only one single nympha has as yet been found, I consider it more appropriate to refer it for the time being to the genus *Trachygamasus*, to which it appears to bear the greatest resemblance in some essential respects. Above all the peculiar shape of the ambulacres of the first pair of legs, which is common both to the present nympha and that of *T. pusillus* (the only known species) is to be taken into consideration, as this, according to BERLESE [4. p. 117.], a feature, otherwise not met with amongst the Parasitinæ; on the other hand the peritremata, being very short, resemble much those of the genus *Podolaelaps* BERLESE described on a single nympha from Matto-Grosso in Brazil [2. p. 207, tab. IX, fig. 3] and the narrow, slender mandibles bear the greatest resemblance to the genus *Iphis* (*Emæus*).

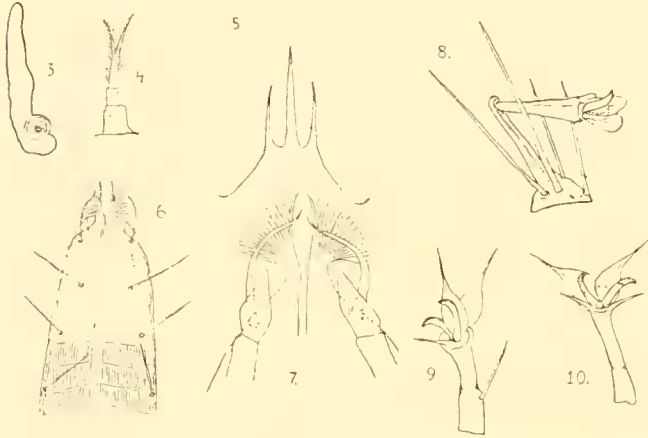
Length (excl. capitulum) 0.61 mm. Breadth 0.4 mm.

Colour, very light straw-yellow. The shape oval, pointed posteriorly.

The *dorsal side*. (Pl. III. fig. 9.) I have not been able to detect any distinct dorsal shields, but on a level with trochanter IV, there seems to be a transversal line, dividing the cuticle in two parts, one greater anterior and one smaller posterior one. The dorsal side is provided with numerous, regularly placed, bare bristles of which 4 pairs are about twice as large as the others and placed as follows: one pair, directed forwards, near the median line, close to the anterior margin, the second pair nearer the side equidistant from the middle and the lateral margin and on a level with the anterior edges of coxæ II; the third pair is still nearer the side and on a level with the posterior edges of coxæ II; the fourth pair is inserted straight behind

the second pair and a little behind a line drawn between the posterior edges of coxæ III.

Ventral side. *Tritosternum* (Text-fig. 4) short, with short quadrangular, anteriorly square trunk; the feathered slips lanceolate, not quite three times as long as the trunk. *Sternal portion*



Trachygamasus(?) Ohlini. TGDH.

Fig. 3. Stigma & peritreme. Fig. 4. Tritosternum. Fig. 5. Epistoma. Fig. 6. Hypostoma, ventral view. Fig. 7. Same, dorsal view. 662 ×. Fig. 8. Ambulacrum I. Fig. 9. Ambulacrum II. Fig. 10. Ambulacrum IV. All figs. except fig. 7. 460 ×.

weak, with three pairs of rather long hairs. *Ventral portion* with two pairs of hairs; on both sides of the anal aperture two and at the posterior margin one pair of hairs.

Peritremata short (Text-fig. 3) only about three times as long as the diameter of the *stigmata*, which are to be found on a level with the middle of coxæ IV.

The *legs* are long, the 1st and 4th being longer than the body, resp 0,76 mm

and 0,72 mm, richly provided, especially the tarsi, with rather long, setiform hairs of which two terminal dorsal ones of the tarsi I are inserted on small, verruciform projections. Tarsus I is almost cylindrical and suddenly narrows towards the end; tarsi II—IV gradually narrow throughout their whole length. Genua IV somewhat swollen.

Ambulacres I (Text-fig. 8) with a 2-lobed rounded caruncle and claws on a long, 2-jointed peduncle; in the present specimen the two joints make a right angle. *Ambulacres* II—IV (Text-figs. 9 and 10) with comparatively longer caruncles and two subunguinal hairs. Peduncles of tarsi II and III rather short, those of tarsi IV nearly as long as those of tarsi I, but straight.

The *epistoma* (Text-fig. 5) triangular, tridentate, with long, sharp teeth, of which the median one is larger and longer than the others. *Styli* present, large.

The *hypostoma* (Text-figs. 6 and 7). The hypostomatic hairs are of uniform shape and situated widely apart; the anterior pair, which is somewhat more slender and curved upwards and inwards, is inserted close to the anterior margin; the posterior pair near the postero-lateral angle; of the median pairs, one is placed about halfway between the anterior and the posterior pair, the last pair nearer the median line and a little nearer to the other median than to the anterior pair.

The *maxillary lobes* 2-jointed, for the most part covered by the hypostoma, with narrow, cylindrical proximal joint, the distal joint gradually widening towards the middle and from thence narrowing to the conical, pointed end. Central projections rather short, with semicircular fan-shaped fringe.

The *mandibles* (Pl. II, fig. 17) are very slender, with narrow chela, thus bearing a great resemblance to those of the genus *Iphis*. The lower jaw is shorter than the upper one, with one small terminal and two other small teeth; the upper jaw with large conical terminal tooth and in front of this projecting in a thin, oval and rounded blade.

The *palpi* with five free joints, gradually narrowing towards the end; the four first joints of about equal length, richly provided with hairs; terminal joint shorter than the others, with a bundle of about 10 sharply pointed hairs.

Locality: No. 11. One nymph.

3. *Gamasellus Racovitzai* (TRT) TRÄGÅRDH.

1903. *Gamasus Racovitzai*. TROUESSART. Résultats du Voyage du S. Y. Belgica en 1897—1899. Zoologie. Acariens, p. 8—9. Pl. I, figs. 3, 3 a—3 d.

(Pl. II, figs. 1, 2, 10, 19, 20 & 23; text-figs. 11—14.)

This species was described by TROUESSART (loc. cit.) from Gerlache Strait, but his description is insufficient and partly incorrect. T. has not dissected the mandibles of the male and has thus not seen that the long appendages he describes belong to the mandibles and not to the maxillary lobes or »corniculæ», a mistake which has induced him to refer the species to the genus *Parasitus* (*Gamasus*).

The following additions and corrections are to be made to T.'s description.

The *ambulacres* I are in both sexes provided with smaller claws than those of the other pairs of legs and the caruncle is divided in three somewhat larger lobes. Ambulacres II—IV with larger claws and the caruncle divided only in two lobes. Tarsi II—IV ending in two small sharp projections.

Peritremata (Pl. II, fig. 19) short, the stigmata being situated near the anterior margin of coxæ IV, the peritremata not extending forward beyond the posterior margin of coxæ II.

The shoulders are well marked. The posterior hairs of the dorsal side are slightly longer than the others.

The male.

Jugular shield very narrow, double.

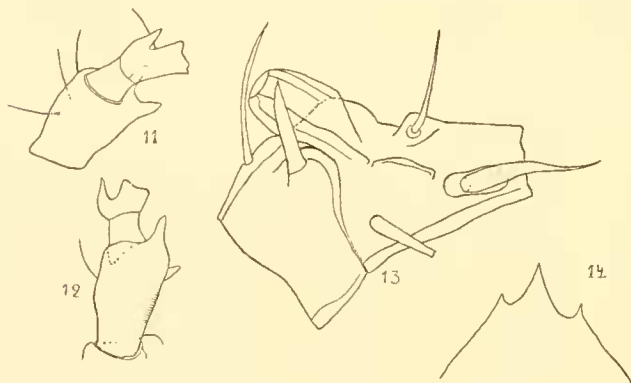
Sternal shield with the usual three pairs of hairs. *Ventri-anal shield* occupies only the median part of the belly, being as broad as the distance between the exterior edges of the coxæ IV.

Epistoma (Text-fig. 14). Besides the three teeth mentioned and delineated by TROUSSERT there is often a small tooth more laterally on each side.

Hypostoma upon the whole correctly delineated by T. with the exception that in reality the maxillary lobes are not fork-shaped but simple. The four usual pairs of hypostomatic hairs present. The *palpi* (Pl. II, fig. 2) with five free joints; the second (first free) third and fourth of equal length; the second and fourth half as wide as long, cylindrical, the third one is thickened and on the ventral side provided with a large, rounded, knob-like projection with a longitudinal groove in the top; 5th and 6th joints together as long as the 4th, the 6th being only half as long as the 5th and richly provided with hairs. Hairs of palpi simple, arranged as follows: II one ventral; III three dorsal, one exterior, one interior; IV three dorsal, one exterior, two interior of which one is feathered; V two ventral, 10—12 terminal.

The *mandibles* (Pl. II, fig. 20). The lower jaw slightly shorter than the upper one, with one large, strongly curved terminal tooth and one smaller, sharply pointed,

median one. It has a long, slender, needle-shaped, upwardly curved, pointed calcar mandibuli attached with large base to its outer side; calcar nearly twice as long as the chela. The upper jaw is straight for $\frac{3}{4}$ of its length, provided with one large terminal tooth and three other teeth of which the anterior one, situated just in front of the sense hair, is extremely small, while the other two are as large as the terminal one.



Gamasellus Racovitzai (TRT.) TGDH.

Figs. 11 and 12. Trochanter and femur IV ♂. 100 ×. Fig. 13. Processus tarsalis of leg II ♂. 412 ×. Fig. 14. Epistoma ♂. 412 ×.

The *legs*. Legs I (Pl. II, fig. 23) long, slender with small, demarcated basifemur and basitarsus. Coxa slightly curved, with a small, median, ventral projection; tarsus of uniform thickness throughout.

Legs II¹⁾ (Pl. II, fig. 1) thick, with large, slightly upwardly curved *calcar femoralis* provided with a sharp dorsal edge; *processus axillaris* small, straight, sharply pointed; *processus stridularis genualis* and *tibialis* nearly of the same hatchet-like shape, with the front angles projecting sharply. The tarsus has a very remarkable shape (Text-fig. 13). It is just in front of the demarcation between basi- and telotarsus curved downwards and on the internal side provided with an

¹⁾ In the description of legs II I have adopted the terminology proposed by BERLESE.

obliquely and backwardly directed projection, nearly cylindrical in form, which seems to be the orifice of a duct. The projection is supported by a strong sharply pointed bristle, situated close to the anterior margin of the basitarsus. Furthermore there are two sharp ridges on the internal side of the telotarsus extending one in front of the other along a line drawn from the top of the projection obliquely towards a large hair, situated near the ventral (inner) edge of the telotarsus.

Legs III and IV slender, with tarsi narrowing gradually towards the end; tarsi IV longer and provided with longer hairs.

Female.

The *epistoma* and *hypostoma* are correctly delineated by TROUËSSART with the exception, that there are four pairs of hypostomatic hairs instead of the two pairs delineated by him. The second free joint of the palpi thick, but without a distinct ventral projection.

The *mandibles* (Pl. II. fig. 10); the lower jaw slightly shorter than the upper one, for the two distal thirds of its length curved upwards, with large terminal tooth and three others of which the posterior one is the largest. The upper jaw is straight and has, besides the terminal tooth, five others of which two small ones are situated opposite the terminal tooth of the lower jaw and the 3rd and 4th opposite the first and second of the lower jaw.

The *legs* (Text-figs 11 & 12). The exterior dorsal edge of trochanter IV bears two straight projections of which the anterior one is twice as long as the posterior one. The telofemur, on the ventral side, close to the proximal edge provided with a third projection directed obliquely outward. TROUËSSART has not delineated the smaller one of the *processi trochanteralis*, which is indeed easily overlooked if the leg be not cut off and examined from both sides. The cuticle of trochanter IV has distally a rounded elongate area, striated transversally (Text-fig. 12).

The above described species differs from the other members of the genus through the peculiar shape of tarsus II of the male. As however a structure of tarsus II ♂ very similar to that of *G. Racovitzai* occurs in a member of quite another genus viz. *Hydrogamasus* which will be described below it appears to be of no generic nor even of subgeneric value.

A *processus tarsalis* of ♂ leg II has, as far as I am aware,¹ as yet only been found in *Parasitus magnus* KR. and in *Halolaelaps glabriusculus* BERL. & TROUËSSART. In both these species they are however differently shaped and situated on the ventral side of the tarsus, not on the dorsal side as in *G. Racovitzai* and *Hydrogamasus antarcticus* *Processi trochanteralis* and *femoralis* of leg IV ♀ have only been found in the female of *Cyrtolaelaps Capreolus* BERLESE from Java.

Locality: No. 2. Several males, females and nymphæ.

¹⁰³⁸ 07 Schwedische Südpolar-Expedition 1901—1903.

Gamasiphis BERL.

1904. *Gamasiphis nov. gen.* BERLESE. Acari nuovi. Manipulus 2, in Redia, vol. I, fasc. 2, 1903, p. 261.

Syn. 1907. *Heydeniella nov. gen.* F. RICHTERS.

The genus *Heydeniella* lately instituted by RICHTERS [9] is undoubtedly the same as *Gamasiphis* BERL. RICHTERS tells us that the genus is characterized by the ventri-anal shield being coalesced with the dorsal shield. In the male the shields are stated to have quite coalesced; in the female a short split is said to exist, extending backwards from the limit between the genital, ventri-anal and dorsal shields. Now this feature happens to be exactly the characteristic of the genus *Gamasiphis!* To be convinced of this fact we need only glance at the drawings of *G. pulchellus* BERL. the type species of the genus *Gamasiphis* made by BERLESE [I, fasc. 39, No. 4]. It is true that also in *Parasitus subgen. Ologamasus* these shields are more or less coalesced, but as RICHTERS' species is stated to have a free calcar mandibuli, it belongs to *Gamasiphis*; otherwise it would belong to *Parasitus subgen. Ologamasus*.

4. *Gamasiphis loricatus nov. spec.*

(Pl. I, figs 4, 5 & 7, text-figs 15-17.)

Male. Length 0,94 mm. Breadth 0,55 mm.

Shape oval, with distinct shoulders; the anterior margin rounded, the posterior a little pointed.

Colour, deep chestnut brown.

Texture scaly by fine, raised and undulating lines, running transversally and connected by other, oblique lines, thus forming irregular hexagonal-oval areas.

Dorsal side covered by a single, somewhat arched shield, with about 25 pairs of regularly placed, fine, straight, pointed hairs, gradually becoming longer towards the posterior margin; about 12 pairs of marginal hairs.

Ventral side (Pl. I, fig. 5). *Tritosternum* with an incision near the base. One pair of *jugular shields*, with narrow median halves, anterior margin concave, gradually rising towards the lateral third; the exterior angles with an incision, no hairs (text-fig. 17).

Sternal shield of even width throughout, extends backwards to the level of the hind margin of coxæ IV; anterior margin straight, with a great circular incision to receive the genital aperture; the posterior margin slightly convex; antero-lateral angles long, extending as far as the exterior margin of coxæ II; postero-lateral angles short and pointed.



Gamasiphis loricatus TGDH adult ♂.

Fig. 15. Right maxillary lobe. 232 ×. Fig. 16. Epistoma. 464 ×. Fig. 17. Jugular, genital and anterior part of sternal shield. 330 ×.

Parallel with the anterior edge of the sternal shield, behind the anterior pair of hairs there is a pair of light coloured grooves, which, as in the case of *Hydrogamasus antarcticus* TGDH I interpret as being remnants of a fusion between a second pair of jugular shields and the sternal shield. This seems all the more probable as in *G. pulchellus* there are two pairs of jugular shields. Such light coloured grooves are also to be found running parallel with the edges of the foveolæ pedales. (Text-fig. 17.) Five pairs of hairs on the sternal shield, of which one pair is near to the anterior margin, one on the inner side of coxæ II, two pairs on the inner side of coxæ III and one pair in the postero-lateral angles.

The *genital aperture* large, covered by a rounded plate, whose anterior edge projects in a small point: the genital plate is almost entirely surrounded by the sternal shield. (Text-fig. 17.) The ventri-anal shield coalesces with the dorsal shield in the posterior half, but a distinctly demarcated line runs in an even curve inwards from the postero-lateral angles of the peritremata and extends backwards as far as $\frac{1}{2}$ of the length of the ventri-anal shield.

There are about 14 pairs of hairs shaped like those of the dorsal shield.

Anal aperture small, raised and situated near the posterior margin.

Stigmata between coxæ III and IV; peritremata lateral, raised, extend forward to the level of the anterior margin of coxæ I; peritrematic shields discernible on the exterior side near the posterior end of the peritremata, not demarcated from the ventri-anal shield at the back.

The *legs* richly provided with rather long, fine, bare hairs. Legs I with long, curved coxæ, twice as long as the trochanter, which on the dorsal side has a large bristle; femur of the same length as the tarsus, which latter is of even width throughout and narrows very abruptly at the end; genu nearly of equal length with the tibia, which is $\frac{4}{5}$ of the tarsus; tarsus very richly provided with hairs, especially at the end, on the exterior side; claws small with semicircular caruncle.

Legs II, large and thick; femur with *calcar femoralis* (Pl. I, fig. 7) rather long, fingershaped, with constricted base and rounded tip; there is no processus genualis

nor tibialis nor tarsalis; claws larger, caruncle bilobated, one pair of subunginal flaps.

Legs IV with long femur and tarsus; tarsus IV in the middle of the dorsal side with one long tactile hair.

Epistoma (Text-fig. 16) triangular, with long, median mucro; the edges slightly concave with 12—14 pairs of small, sharp teeth Styli present, narrow and short.

Hypostoma (Text-fig. 15); maxillary lobes 2-jointed, with broad basal joint, covered by the lateral edge of the maxillary plate; terminal joint with broad base; its inner (median) edge with a deep incision.

The *mandibles* (Pl. I, fig. 4) with rather broad chela; lower jaw a little shorter than the upper one and with the ventral edge more curved; sharp terminal tooth and one sharp tooth a little in front of the middle, behind this an incision and a high sharp edge; calcar mandibuli fused with the lower jaw with broad base, narrow, of even width throughout, exactly as long as the chela and curved upward and forward near the tip. The upper jaw with more straight dorsal edge, a little longer than the lower one, with one small subterminal tooth beside the terminal one and two larger teeth at regular intervals; between the subterminal and the first middle tooth several small teeth and the sense organ.

The *maxillary palps*; on the inner side of the third joint in the middle one large feathered bristle and more ventrally one curved bristle with flattened ventral edge.

Locality: No. 12. One male.

5. *Hydrogamasus antarcticus* nov. spec.

(Pl. II, figs 6, 18, 21. Pl. III, fig. 2, text-figs 18—25.)

Male. Average length 0,65 mm, breadth 0,38 mm.

Female. " " 0,69 " " 0,4 "

Male. *Shape, colour and texture* like that of *H. salinus* LAB. [= *H. littoralis* (G. R. CAN.) BERL.]. *Dorsal side* covered by a single shield, provided with small, regularly placed hairs; near the hind margin two pairs of somewhat longer hairs.

Ventral side. *Tritosternum* with narrow nearly cylindrical trunk, three times as long as broad; the feathered slips very narrow, three times as long as the trunk.

Only one pair of *jugular shields* (Text-fig. 22), jugular shields narrow, triangular, with straight hind margin; the front margin from the median (inner) angle slightly rising for $\frac{2}{3}$ of its length, from thence suddenly falling off; no hairs.

Sternal shield: instead of the usual 3 pairs of hairs it is provided with not less than 5 pairs, of which one is situated close to the anterior margin, halfway between the genital aperture and the antero-lateral angles; the other 4 pairs are all situated near the sides, one on the inner side of coxæ II on a level with their middle, two

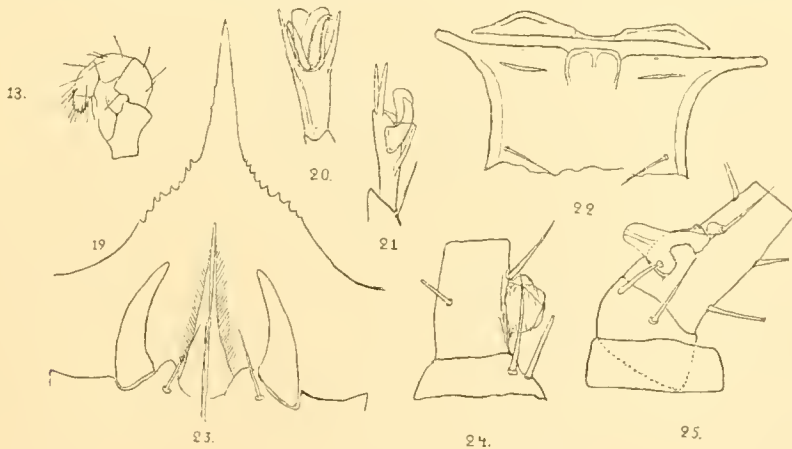
pairs on the inner side of coxæ III and one pair on the inner side of coxæ IV behind their middle.

Near the anterior margin, behind the first pair of hairs, is to be seen a pair of long, transversal, light-coloured grooves. This feature, in connection with the super-numerary number of sternal hairs, seems to indicate that the portion in front of the grooves is homologous to the second pair of jugular shields, which is to be found in the other species of *Hydrogamasus*. Thus in the present species, if my interpretation be correct, the posterior pair of jugular shields has coalesced with the sternal shield.

The *sternal shield* extends backward as far as the hind margin of coxæ IV, gradually narrowing backwards; hind margin slightly convexe. *The genital aperture* inserted in an incision of the front margin of the sternal shield.

Ventri-anal shield large, covering nearly the whole belly, shaped like that of *H. salinus* LAB. *Anal aperture* situated close to the posterior margin.

Legs. Legs I long and slender, with long coxæ bent like a knee: claws and caruncles smaller than those of the other legs. Legs II (Pl. II, fig. 6) thick, with great *calcar femoralis* curved sharply upwards, of uniform width throughout and ending in a sharp, chiselshaped square edge; no *processus axillaris*, only a short hair in its place; *processus stridularis genualis* a rather low ridge with rounded edge; *processus tibialis* perpendicular, short, thorn-shaped. The tarsus has a very remarkable shape and bears a great resemblance to that of *Gamasellus Racovitzai*; it is a little in front of the joint between basi- and telotarsus, curved downwards and on the



Hydrogamasus antarcticus TGDH.

Fig. 18. Palp, ♂. 112 ×. Fig. 19. Epistoma, ♂. 464 ×. Fig. 20. Ambulacrum II. 464 ×. Fig. 21. Ambulacrum I. 464 ×. Fig. 22. Jugular, genital- and anterior part of sternal shield, ♂. 232 ×. Fig. 23. Anterior part of hypostoma, ♂. 464 ×. Fig. 24. Basitarsus and part of telotarsus with processus tarsalis ♂. Dorsal view 464 ×. Fig. 25. The same ♂ side view. 464 ×.

outer upper side near the joint provided with a complicated projection, directed obliquely backwards (Text-figs 24 and 25). Legs III and IV do not exhibit any peculiarities.

The *ambulacres* are of the shape, typical for the genus (Text-figs 20 & 21). The claws are comparatively smaller and the secondary claws larger than for instance in *H. salinus* LAB.

The *epistoma* (Text-fig. 19) triangular, with long, sharply pointed, median mucro; the edges are provided with about 10 pairs of small, sharp teeth.

The *hypostoma* (Text-fig. 23); the anterior pair of hypostomatic hairs larger than the others. The *maxillary lobes* simple, rather long and narrow, curved inwards. *Styli* present, small, directed nearly perpendicularly inwards.

The *mandibles* (Pl. II, fig. 18). The lower and the upper jaw of the chela of the same length and width; the lower one with one, the upper one with two sharp, backwardly directed teeth, beside the terminal ones. *Calcar mandibuli* of even length throughout, curved slightly upwards, of exactly the same length as the chela.

The *maxillary palps* (Text-fig. 18) with 5 free joints; the first one narrow, twice as long as broad, on the ventral side with two hairs inserted in very low projections; the second, third and fourth joints of equal length, but the second broader, nearly as broad as long; the third joint on the inner side provided with a strong, serrated bristle; terminal joint small, only half as long and broad as the fourth, with rounded top and richly provided with hairs.

Female.

Dorsal side like that of the male.

Ventral side (Pl. III, fig. 2). *Tritosternum* shaped like that of the male. One pair of *jugular shields*, a little broader than those of the male and with the thick anterior edges falling off more abruptly towards the middle; without hairs.

Sternal shield short, extending backwards as far as to the middle of coxæ III, shorter than the genital shield. The front margin square, the antero-lateral angles very long, extending in front of coxæ II as far as to their outer side; the hind margin with a deep, semi-circular excavation. 4 pairs of pointed bristles, much larger than those of the male; the first one situated near the front margin, directed backwards; the others situated near the sides and directed centripetally (towards the middle), the second at a level with the middle of coxæ II, the third in the angle between coxæ II and III, and the last pair in the postero-lateral angles of the shield.

Parallel with the anterior margin of the sternal shield is a pair of light spots, which, as in the case of the male, I am inclined to interpret as an indication of a second pair of jugular shields.

The *genital shield* is large, extending forwards nearly as far as to the front margin of coxæ III and backwards a little beyond coxæ IV; the front margin is semi-circular, the sides are subparallel, slightly concave; the hind margin almost

square, the postero-lateral angles rounded. Only one pair of hairs, directed towards the middle and situated near the sides, far back.

The *ventri-anal* shield very large covering the whole belly, except for a rather narrow band along the lateral margins; greatest width near the anterior angles; the anterior margin slightly concave, the antero-lateral angles rounded; the sides slightly convex, gradually falling off towards the rounded hind end. The hind margin of the ventri-anal shield not contiguous with the hind margin of the body; 5 pairs of hairs, of which two are situated near the front margin, two near the sides, and one pair on both sides of the anal aperture; one median hair behind the anal aperture.

The *anal aperture* situated near the hind margin of the ventri-anal shield.

Pedal shields well developed outside the coxæ; pedal shields II and III fused together one with another, but distinctly demarcated from the narrow *peritrematic shields*, which are fused with the small *metapodial shields* at their hind end.

The *legs*. Legs II not thickened.

Epistoma and *hypostoma* shaped like those of the male.

The *mandibles* (Pl. II, fig. 21) a little narrower than in the male; the lower jaw a little shorter and more curved than the upper one, beside the terminal tooth with three short, sharp teeth placed at regular intervals; the upper jaw with two small teeth, of which one is directed outward, opposite the terminal tooth of the lower jaw, three teeth opposite one to another of those of the lower jaw and behind the last one a high, knife-shaped blade; between the first of them and the subterminal ones are two very small teeth and the sense hair.

Locality: No. 5. Several ♂ and ♀.

6. *Laelaps (Eulaelaps) grahamensis* nov. spec.

(Pl. II, fig. 5. Pl. III, fig. 8. Text-figs 26—29.)

Length 0,648 mm. Breadth 0,4 mm.

Shape oval, posteriorly rounded, anteriorly with short, median blunt projection.

Colour, light yellow.

The *dorsal side* (Pl. III, fig. 8) covered by a single shield clothed with regularly placed hairs of which those situated in the anterior $\frac{1}{3}$ are much longer than the others, and gradually diminish in length further back.

The *epistoma* (Text-fig. 27) semicircular, with long, triangular projection with smooth edges, near the top with a pair of small teeth.

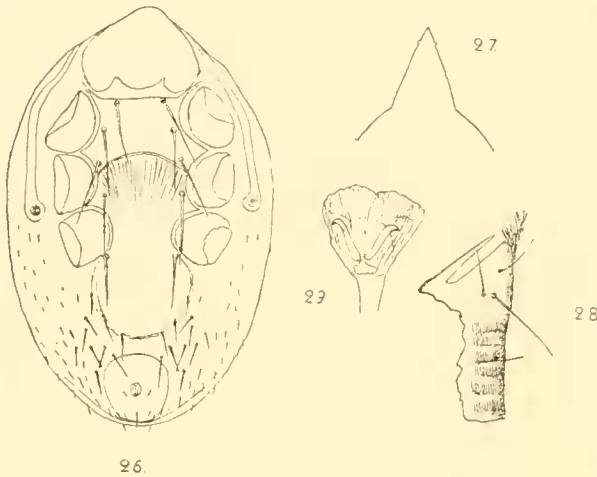
Ventral side (Text-fig. 26).

Tritosternum of usual shape. Hypostomatic hairs delineated in Text-fig. 28. The maxillary lobes very thin and hyalin, rather long.

The *maxillary palps* do not exhibit anything peculiar. *Mandibles* (Pl. II, fig. 5) with short and broad chela; the lower jaw slightly shorter than the upper one, with

two teeth close together, behind the terminal tooth of which the posterior one is slightly larger. The upper jaw is broad at the top, with one short, blunt tooth immediately behind the short terminal tooth. Lacinia with short trunk, situated behind the joint.

No *jugular shield*. *Sternal shield* short and broad, with square anterior margin, the posterior margin deeply semicircularly excavated; extending backwards as far as a little in front of the middle of coxæ III and provided with one anterior and two lateral pairs of long, sharply pointed bristles.



26.
Lelaps (Eulelaps) grahamensis TRÄGDH adult ♀.

Fig. 26. Ventral view. 71 ×. Fig. 27. Epistoma. 414 ×.
Fig. 28. Hypostoma side view. 206 ×. Fig. 29. Ambulacra I. 414 ×.

Geniti-ventral shield anteriorly broad, semicircular, narrowest between coxæ IV; behind these widening to a nearly circular shield, of which the diameter is a little less than half the length of the whole shield. The shield is provided with two lateral, long, sharply pointed bristles, one on the inner side of coxæ III just behind the middle, the other behind coxæ IV; at the posterior end, on the border of the shield, are three pairs of smaller hairs.

Anal shield rather large, pyriform, anteriorly broader, not contiguous with the geniti-ventral shield; the posterior edge transversally striated; one pair of small hairs one on each side of the anal aperture, near the posterior margin two pairs and one median hair. The cuticle between the geniti-ventral and anal shields provided with about 8 pairs of hairs of the size of the posterior geniti-ventral hairs; the other hairs of the belly small, scattered.

Stigmata between coxæ III and IV. Peritremata long, anteriorly becoming dorsal.

Legs. Legs I with smaller claws and very large bilobated caruncle (Text-fig. 29).

Locality: No. 9. One female.

7. *Zercon tuberculatus* nov. spec.

(Pl. II, figs. 8, 13, 15 & 16, text-figs. 30—33.)

Length 0,63 mm. Breadth 0,32 mm.

Colour, yellowish-white. *Shape* of the body, elongated quadrangular, with slightly convex sides; the greatest width between coxæ II and III; at the anterior and the posterior end squared-rounded; the hind margin with 4—5 pairs of small, hyalin, conical tubercles (Pl. II, fig. 16).

The *dorsal side* covered by a single, weak shield, which in some places exhibits a net-like, scaly texture and by higher magnification is seen to be very finely striated transversally. Hairs rather scarce, becoming longer towards the posterior end. The hind margin provided with one pair of small median hairs and two pairs of long lateral hairs.

Ventral side.

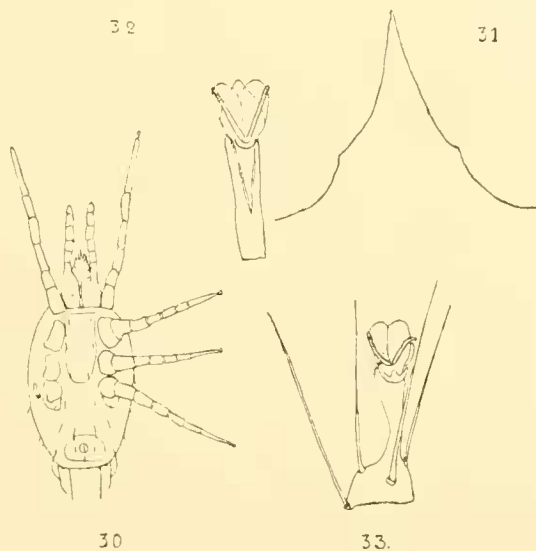
Tritosternum with broad, almost cylindrical trunk, the anterior end square, with a median incision; the feathered slips very narrow, lanceolate, a little more than three times as long as the trunk. *Sternal shield* (Text-fig. 30) very weak, partly finely punctured, posteriorly rounded, extending backwards as far as to the hind margin of coxæ III, with three pairs of hairs. *Ventral portion* very soft, with four pairs of hairs, of which the posterior one is inserted near the postero-lateral angles of the body and extends far beyond the margin.

Anal shield square-oval, with net-like texture, nearly contiguous with the hind margin, with three small hairs.

Behind coxæ IV are indications of *metapodial* shields, finely punctured.

Peritremata (Pl. II fig. 13) very short, only twice as long as broad, situated outside coxæ IV.

The *epistoma* (Text-fig. 31) triangular, with a long median projection; the outlines of the sides divided in two concave parts, one more deep proximal and one more shallow distal.



Zercon tuberculatus TGDH. nymphae.

Fig. 30. Ventral view. 30 ×. Fig. 31. Hypostoma. 620 ×.
Fig. 32. Ambulacre III. 620 ×. Fig. 33. Ambulacre I.
620 ×.

The *hypostoma* rather long (Pl. II, fig. 15) with the usual four pairs of hairs.

Maxillary lobes rather large, sharply pointed.

The *mandibles* (Pl. II, fig. 8); the lower jaw slightly shorter and more curved than the upper one, with two anterior, small, and one posterior, large tooth, besides the terminal tooth. The upper jaw with two small teeth opposite the terminal tooth of the lower jaw, two others exactly opposite the median ones of the lower jaw; between these the sense-hair, behind them a small incision and a high, sharp edge.

The *palpi* rather long, measuring 0.23 mm, with 5 free joints; the first four joints of about equal length, the third (second free) somewhat swollen; the terminal joint more narrow and only half as long as the fifth, richly provided with hairs.

The *legs*. Legs I a little longer than the body, 0.65 mm, II 0.39 mm, III 0.42 mm, IV 0.54 mm, all richly provided with setiform hairs.

Ambulacres I with smaller claws than the others and a caruncle which is only two-lobed (Text-fig. 33). Ambulacres II—IV with larger claws and three-lobed caruncle; the median lobe more pointed than the lateral ones (Text-fig. 32).

Locality: No. 8. One nympha.

Tectopenthalodes nov. gen.

General shape like that of *Penthalodes* MURR. Capitulum reduced. Epirostral plate present, three-lobed. No pigmented, eyelike structure. Palpi 4-jointed. Type: *T. villosus* TRT.

In the description of *P. arcticus* TGDH. [13, p. 42] I already pointed out that that species differed from the other species of the genus *Penthalodes* in some essential respects. The differences are: the reduction of the capitulum and the presence of an epirostral plate. In *Penthalodes* and indeed in most of the other genera of the sub-family Eupodinae, except *Ereynetes* and *Stercotydeus*, there is at the base of the rostrum a spherical so-called capitulum, with two hairs; but on the other hand there is no epirostral plate.

In *P. arcticus* TGDH. the capitulum is greatly reduced and modified into a circular, depressed area, with two small hairs and there is a slight indication to an epirostral plate in shape of a cuticular fold of the anterior edge of the cephalothorax.

In *T. villosus* TRT. it is still more reduced, being only represented by a small oval area with two small hairs, situated at the base of the epirostral plate; the area is not distinctly demarcated as in the case of *P. arcticus*, but its texture differs from that of the other cuticle in being smooth, while the cuticle round it is sculptured.

The projection of *T. villosus* TRT. is developed into a large plate and covers nearly the proximal half of the mandibles.

Although both species bear a great resemblance in these respects yet they cannot be referred to the same genus on account of the entirely different shape of the epirostral plate and structure of the cuticle and the cephalothorax being distinctly separated from the abdomen in *T. villosus*.

The genus *Tectopenthalodes* is most closely related to *Stercofydeus* BERL. & LEON. [15, p. 14—15] described from South America, which has however 5-jointed palpi.

8. *Tectopenthalodes villosus* TRT.

1903. *Penthaleus villosus* TROUESSART [11, p. 6].

(Pl. I, figs. 9 & 10, Pl. II, figs. 3, 4 & 7, text-fig. 31.)

My specimens agree wholly with T.'s type specimens, which I have been able to examine.

The following additions and corrections are to be made in T.'s description.

Texture. If the mite is macerated in caustic potash we notice that the exceedingly minute velvet hairs are arranged in polygonal areas, divided by low, bare ridges (Pl. I, fig. 10).

The *epirostral plate* which covers the base of the rostrum is *three-lobated, not bi-lobated as stated by* TROUESSART (Pl. II, fig. 4); the plate is sculptured by small, semi-spherical projections; the lateral lobes are subquadrangular with fine hairy, slightly undulating edges; the median lobe is rounded and smooth, only clothed with velvet hairs. At the base of the median lobe is a small transverse oval area, where the cuticle is smooth; on this area a pair of small hairs is situated.

The *maxillary palps* (Pl. II, fig. 7); the second joint is broader with more convex dorsal edge than is shown in T.'s figure; the last joint is obliquely truncated at the end; the posterior dorsal hair is, even in T.'s specimens, situated further forward, at the middle of the joint, and the anterior dorsal hair of the 3rd joint is situated close to the front edge of the joint.

The *mandibles* (Pl. II, fig. 3) bear a great resemblance to those of *Halotydeus hydrodromus* BERL. & TRT [I. Fasc. LX. No 10. Tab. 32. fig. 3]; the lower jaw of the chela with broad proximal half and narrow, curved and pointed end, the dorsal edge without teeth. The upper jaw is flattened or even slightly concave at the outer side, lanceolate; the ventral edge is convex and smooth; the dorsal one with one tooth near the end; one curved hair, behind the chela, on the dorsal side.

What TROUËSSART considers to be the third, ventral lobe of the «collerette» is in reality the median, basal part of the maxillæ, which is demarcated from the end of the maxillæ by a line or small fold.¹⁾



Fig. 34. Rostrum and left palp, of *Tectopen-
thalodes villosus* (TRT)
ventral view. 207 μ .

The *maxillæ* (Text-fig. 34) are fused together by $\frac{2}{3}$ of their length; their free ends are short, conical, obliquely truncated at the top; one pair of feathered hairs and, near the top, one pair of very minute, perpendicular hairs.

Cephalothorax (Pl. I, fig. 9). Near the front margin, in the middle, are two horseshoe-shaped crests, with the concave side turned backward. The cephalothoracic shield is separated from the abdominal one by a rather deep groove, the ends of which are curved forward; the edges of the shields bordering the groove are thickened and on the cephalothoracic side regularly undulated. There are three pairs of hairs on the cephalothorax; one pair of feathered hairs in front of the anterior crests; another pair, larger, near the lateral horns of the groove and the third pair, which is bare, is inserted in deep pores near the centre of the shield. The third pair seems to be sense hairs and homologous with the bare shoulder hairs of *T. arcticus* TGDH which latter also are inserted in deep pores. *Abdomen*: on the median shield near the lateral sides 7 pairs of feathered hairs.

Locality: No. 1, 2 and 5.

Rhagidia THORELL.

1871. *Rhagidia* THORELL.

1886. *Norneria* R. CANESTRINI.

9. *Rhagidia megalochela* nov. spec.

(Pl. II, figs. 11 and 14, text-figs. 37, 40, 46 and 47.)

Length. 1,1 mm.

General shape like that of *R. gigas* R. CAN.

The *mandibles* (Pl. II, fig. 14, text-fig. 37).

The chela is enormously developed, attaining a little more than $\frac{1}{2}$ of the length of the entire mandible. The lower jaw is strongly curved upwards for the greater part of its length and narrows gradually from the base to the tip; the condylus is narrow and does not widen at a right angle with the jaw as in *R. gelida* and *R.*

¹⁾ This basal part has been cut clean off during the preparation while on the dorsal side the 3-lobed epistrostral plate remained; thus the median lobe, the outline of which is nearly parallel with that of the basal part of the maxillæ, was exactly covered by the latter and consequently if the tube of the microscope is slightly lowered showed through and caused T.'s mistake. As I have been able to see the specimen from which T.'s figure is made, there can be no mistake about the above explanation.

gerlachei: the dorsal edge of the lower jaw is not raised and is without teeth. The dorsal margin of the upper jaw has a sharp excavation at a level with $\frac{1}{3}$ of the length of the lower jaw. The upper jaw is very broad for the two proximal thirds of its length with a high, raised ventral edge, forming an angle of nearly 60° with the dorsal edge of the lower jaw, when closed, from thence abruptly narrowing towards the distal third, which is of nearly even length throughout. The posterior dorsal hair is situated at a level with the middle of the lower jaw.

The *maxillary palps* (Pl. II, fig. 11); the fourth joint shorter than the second one and comparatively broader than in *R. gigas*, being only very little more than twice as long as broad.

Rostrum (Text-fig. 40); the maxillæ are almost wholly fused together, constituting the short conical rostrum, provided at the tip with a median short lanceolate appendage; the antero-lateral edges projecting into a semi-circular,

thin plate the edge of which is provided with 3—4 larger teeth and behind these with several small ones. Two pairs of hairy bristles on the ventral side near the base and two bare, more pointed hairs (Text-fig. 40).

The *Legs*. The tarsi, especially those of the first pair of legs, provided at the tip with numerous short, straight and blunt bristles (Text-fig. 46). The pulvilli thick at the base, narrowing towards the end, slightly longer than the claws (Text-fig. 47).

Rhagidia megalochela differs widely from all species as yet known of the genus by the enormous development and shape of the chela mandibuli. (Compare Text-figs 35—39.)

Locality: No. 14. one specimen.

Notes on *R. gigas* subsp. *Gerlachei* TRT., *R. gigas* R. CAN. and *R. gelida* THOR.

In order to ascertain whether TROUËSSART is justified in his treating *R. gerlachei* as a subspecies of *R. gigas*, I submitted to an examination the specimens of the latter

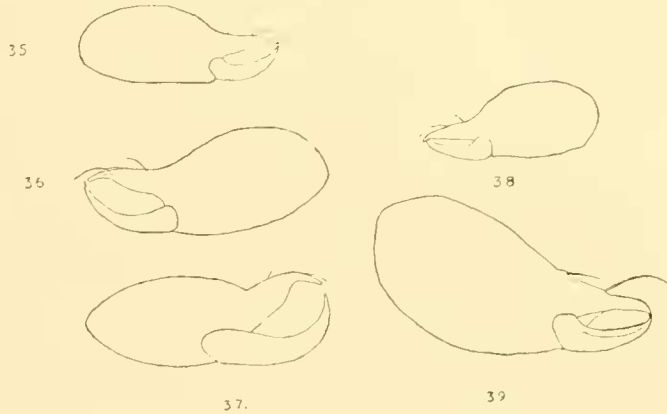


Fig. 35. Mandibles of *R. gigas* (from Natal). Fig. 36. *R. gigas* (from Egypt). Fig. 37. *R. marochela* (from Falkland). Fig. 38. *R. racovitzai* (from Gerlache strait). Fig. 39. *R. gelida* (from Greenland).

All figures 232 \times .

species, which I have collected in Egypt and Natal, as well as *R. gelida* (from Greenland) and TROUËSSART's type specimens.

This has confirmed my opinion as to *R. gelida* being a distinct species and proved that *R. gerlachei* differs in some more respects from *R. gigas* than appears from T.'s description.

As a general remark stress must be laid upon the fact that most of the descriptions of the species of *Rhagidia* — KRAMER's description of *R. cylindrica* [5, p. 15, Pl. I, figs 23—27] perhaps excepted — do not give enough details with reference to the shape of the maxillæ and the ambulacres and these seem to be the very organs which, in connection with the shape of the mandibles and the palpi, offer the best means of distinguishing the different species.

The *mandibles*.

R. gigas (from Egypt) (Text-fig. 36); the upper jaw with the dorsal edge flattened near the tip; the anterior hair situated on the exterior side, below this a small, longitudinal ridge; the ventral margin with a sharp, raised edge as long as the distance between the hairs. The lower jaw gradually narrowing and curved upwards throughout its whole length; the tip much higher than the level of the condylus, the dorsal edge not raised.

R. gigas (Text-fig. 35) (from Natal, van Reenens Kloof, 5,519 f. altitude). Mandibles smaller but of *gigas*-type, the ventral edge of the upper jaw not so raised and the lower jaw somewhat stouter.

R. gelida (Text-fig. 39); mandibles very large; the chela comparatively smaller, straighter and stouter. Both hairs situated on small projections, the posterior one on a level with the condylus, the anterior one comparatively larger than in the other species. The upper jaw in front of the anterior hair of even width until near the tip which is curved sharply downward; ventral edge very slightly concave, raised abruptly at the extreme back. The condylus of the lower jaw widens at a right angle; lower jaw curved upwards very slightly, with raised dorsal edge, provided with fine teeth.

R. gerlachei (Text-fig. 38). The mandibles differ from the *gigas*-type partly in the same way as those of *R. gelida*, the chela being straighter and stouter; dorsal edge of the lower jaw without teeth.

The *maxillæ*.

Text-figs 41 and 42 show how differently shaped the rostrum of *R. gigas* and *R. gelida* are. I have not been able to see the shape of the rostrum distinctly on the mounted specimens of *R. gerlachei*, sent to me by TROUËSSART.

The *ambulacres*.

R. gigas (Text-fig. 43); the pulvillum is more broad and flat, not so strongly chitinized as in the other species; the claws are stalked, provided with a sharp

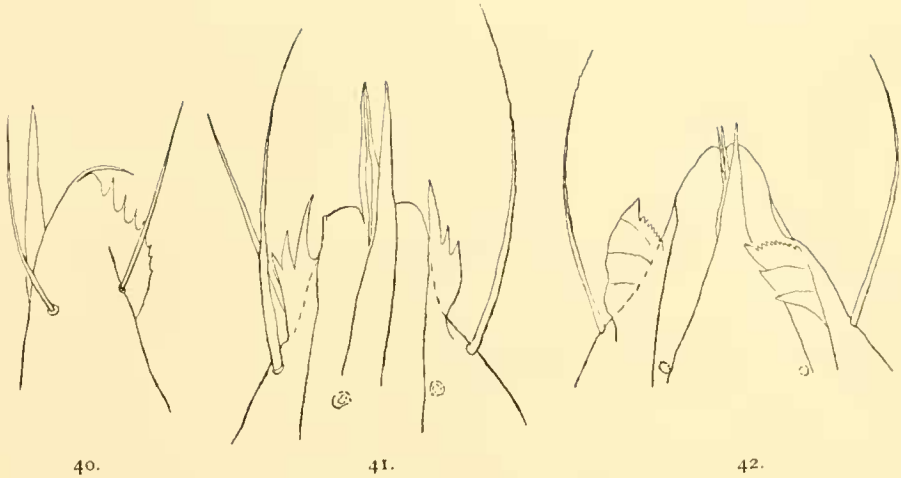


Fig. 40. Rostrum of *R. macrochela*, side view. 620 ×. Fig. 41. Rostrum of *R. gigas* (from Natal), dorsal view. 416 ×. Fig. 42. Rostrum of *R. gelida* dorsal view. 416 ×.

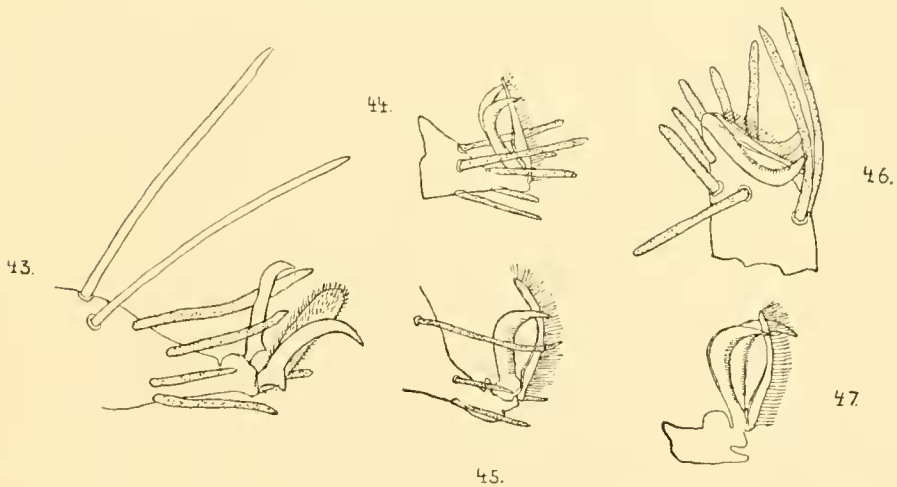


Fig. 43. *R. gigas* (from Egypt). Fig. 44. *R. gelida* (from Greenland). Fig. 45. *R. Racovitzai* (Gerlache strait). Figs 46 and 47. *R. megalochela* (from Observatory Island) 1st & 4th pair of legs.

ventral tooth near the base; the claws of the 1st pair of legs are heterodactylus, one claw being more slender and straight, curved only at the tip, while the other one is more stout and curved.

R. gelida and *R. megalochela* (Text-figs. 44, 46 and 47); the ambulacres of the same shape; the pulvillum widens at the base, is more stout than in *R. gigas* and slightly longer than the claws.

R. gerlachei (Text-fig. 45); the pulvillum shaped as in *R. gelida* and *megalochela* but longer, exceeding the claws by $\frac{1}{3}$ of its length.

10. *Bdella antarctica* nov. spec.

(Pl. II, figs 9, 12 & 21.)

Average length 0,82 mm. Average breadth 0,36 mm. Length of rostrum 0,30 mm.

General shape like that of *B. vulgaris* (HERM.) K. *Cephalothorax* well demarcated from the abdomen, 0,3 mm. long, with 3 pairs of long hairs inserted in deep pores; one pair is situated not far from the anterior margin, the two others of which the lateral one is the longest, are situated on a level with the posterior pair of eyes.

On the *dorsal side* of the *abdomen* are 4 rows of hairs and at the hind margin 4 pairs.

Ventral side. Coxæ I nearly contiguous in the middle, with 5 pairs of hairs, of which 3 near the antero-lateral margin and 2 near the postero-lateral angle; coxæ II with 6 pairs, coxæ III with 8 and coxæ IV with 3 pairs of hairs.

Genital aperture oval, long, with 10 pairs of hairs.

The *legs*. Trochanter I and II at the antero-lateral angle with a straight hair, somewhat longer than the others. Femur not very distinctly demarcated from telofemur, especially in legs I and II. One long sense hair at the top of tibia I and IV and at the base of tarsus III and IV. Length of legs (excl. coxa and trochanter): I 0,48 mm, II 0,42 mm, III 0,52 mm, IV 0,62 mm.

The *mandibles* very narrow, 0,048 mm by a length of 0,296 mm, the greatest width close to the base, from thence gradually narrowing with straight edges. Chela very short, edentate (Pl. II, fig. 9). Near to the chela on the exterior side a small pore. Two hairs on the exterior side of the mandibles, situated much more forward than in *B. decipiens* [12, Pl. II, fig. 3]; the posterior hair is situated very near to the middle and the anterior one half way between the posterior one and the tip (Pl. II, fig. 21).

The *palpi* short, not exceeding the length of the rostrum; the third joint partly fused with the second one; on the exterior side is to be seen no trace of the fusion but on the interior side there is an oblique fold. The second (2 + 3) joint on the ventral side, near to the base, with two rather long, perpendicular, slightly curved hairs; on the exterior side, in the proximal half, three hairs; on the dorsal side, in the distal half, two hairs, and on the interior side in the middle, three hairs. Third joint, narrow, cylindrical, with two dorsal, one exterior, and one interior hair.

Terminal joint triangular, with squared end, half as broad as long; two long terminal hairs inserted in large cup-shaped pores; on the dorsal side near the end one long hair, on the external side one, and on the internal side two small hairs. Rostrum with only 2 pairs of hairs.

Relative length of the joints and the terminal hairs.

	Joints of palpi				Terminal hairs
	2	3	4	5	
<i>B. antarctica</i>	37	8	7	16	45 : 56
<i>B. vulgaris</i> v. <i>decepiens</i>	37.5	5	4.5	13	37.5 : 46
<i>B. vulgaris</i>	35	6	6	20	48 : 55

The present species is closely related to *B. vulgaris* but is easily distinguished from that species by the shape of the mandibles, the situation of the mandibular hairs, the fusion of the 2nd and 3rd joint of the palpi and the number of rostral hairs.

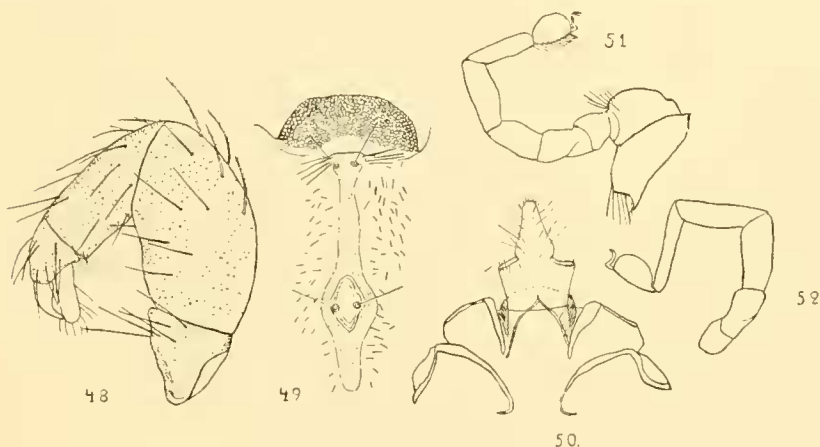
Locality: No 17. Several specimens.

11. *Erythræus antarcticus* nov. spec.

(Text-figs. 48, 52.)

Average length 1.3 mm; breadth 0.75 mm.

Colour, crimson red (according to the notes made on the specimens when alive by Prof. J. G. ANDERSSON).



Erythræus antarcticus TGDH.

Fig. 48. Left mandible seen from the outer side. 230x. Fig. 49. Crista metopica. 112x. Fig. 50. Pseudo-capitulum and coxæ I, II, ventral view. 56x. Fig. 51. Coxæ III and IV and leg III. 56x. Fig. 52. Leg IV. 56x.

The present species seems to be closely related to *E. medioarcolatus* KRAM. [5, p. 10—11, figs. 13—15] described from Tierra del Fuego. It differs from it in the following respects:

¹⁰³⁸/₀₇. *Schwedische Südpolar-Expedition 1902—1903.*

The *palpi* (Text-fig. 48); the second joint is much wider and more curved than in *E. medioareolatus* and the third joint is shorter than the second one, whereas in *E. medioareolatus* they are of the same length; the terminal joint is slightly longer than the claw of the fourth joint. Hairs of the palpi are simple with exception of 3—4 larger hairs which are serrated and situated on the dorsal side of the second joint, near the front margin.

The *cuticle* of the palpi as well as that of the maxillæ is thick and penetrated by numerous, fine pores.

The *maxille* wholly fused together, forming a short rostrum, the length of which is not twice its width at the base; rostrum anteriorly rounded, provided on the ventral side with about 10 pairs of fine hairs (Text-fig. 50).

The *crista metopica* (Text-fig. 49) is finely punctured, not strongly chitinized, anteriorly square, not projecting as in *E. medioareolatus*; the part of the crista in front of the posterior tactile hairs is twice as long as the part behind the hairs, whereas in *E. medioareolatus* the posterior tactile hairs are situated at the middle of the crista.

Eyes single, sessil, situated halfway between the crista and the sides of the body, on a level with the posterior tactile hairs. In front of the crista (Text-fig. 49) at the base of the pseudocapitulum is a collar-shaped portion where the cuticle is soft and finely reticulated by very minute, semispherical projections, which are arranged in transverse rows at the sides. By means of this soft portion the pseudocapitulum seems to be capable of being slightly retracted.

The hairs of the body are simple, setiform and slightly curved.

The *ventral side*. All the coxæ are strongly chitinous and finely punctured; coxæ I and II and coxæ III and IV contiguous; coxæ I short triangular, not contiguous at their proximal ends but separated by a space equal to their own width.

The *legs* (Text-figs 50, 51) shorter than the body; legs I and IV of equal length, 0,8 mm, legs II and III also of equal length, 0,68 mm. The cuticle is thick and richly provided with fine pores; the tarsi twice as high as the tibiæ; hairs of the legs simple, except on the ventral side of the tarsi where they are hairy on the ventral side.

Locality: No. 13. In crevices in the rocks on the shore, within the limits of the tide.

12. *Oribata antarctica* MICH.

1895. *Oribata antarctica* MICHAEL. Die auf Süd-Georgien von der deutschen Station 1882—1883 gesammelten Oribatiden. Jahrb. d. Hamburg. Wiss. Anstalten XII, p. 3, text-fig.

Locality: No. 17. 11 specimens.

13. *Oribata antarctica* MICH. var. **major** nov. var. (Text-fig. 53.)

Average length 0,87 mm; breadth 0,54 mm.

General shape as in *O. antarctica*. The lamellæ comparatively shorter, with comp. longer cusps, converging more closely at the anterior end and with higher translamella. Cusps with slight incision where the lamellar hairs are inserted.

Cephalothorax at the anterior end nearly square, with two small lateral teeth.

Tectopedia I with cusps extending forwards as far as the cephalothorax.

Locality: No. 15. 2 females with eggs.



53

Fig. 53. Cephalothorax of *Oribata antarctica* MICH. var. *major*. 100×.

14. *Oribata affinis* nov. spec.

(Pl. III, fig. 10.)

Length 0,6 mm. Breadth 0,36 mm.

Colour, redbrown. *Texture*, polished.

Rostrum terminating in a small, rounded point. Lamellæ rather large blades on edge, of uniform width, except for the proximal $\frac{1}{4}$, where they gradually narrow; cusps short, not so broad as in *O. piriformis*, anteriorly squared, not truncated. Lamellar hairs straight and short, hairy, inserted in the top of the cusps, extending forward scarcely beyond the tip of the rostrum. Dorsal edge of cusps straight, ventral slightly concave. Translamella a narrow blade on edge, of even width throughout.

Pseudostigmatic organs. I have not been able to see the pseudostigmatic organs, either because they were broken off or because they were concealed by the pteromorphæ. The pseudostigmata are concealed beneath the pteromorphæ.

Interlamellar hairs long, flexible, inserted widely apart.

First tectopedia not so large as in *O. piriformis* and not projecting in long points; second tectopedia wide and rounded.

Abdomen pyriform. Anterior margin of pteromorphæ slightly concave. Two rows of small hairs on the notogaster and three pairs round the hind margin. Genital aperture nearly pentagonal, anteriorly rounded, posteriorly square. Anal aperture oval, nearly contiguous to hind margin.

Legs. Genua I and II and tibia I--IV with one long tactile hair each.

Claws tridactyle, nearly homodactyle.

Locality: No. 12. One specimen.

15. *Oribata alata* HERM.

Locality: No. 16. One specimen.

16. *Hermannia macronychus* nov. spec.

(Pl. III, fig. 1)

Length 0,76 mm. Breadth 0,45 mm.

Colour, very dark brown.

Texture, finely punctured.

Cephalothorax broad and arched, 0,24 mm. long, anteriorly rounded, sharply divided from the abdomen; the sides are slightly excavated on a level with the lamellar hairs. There is one transverse sulcation in front of the lamellar hairs. A broad raised, subtriangular portion between the pseudostigmata is divided from the other part of the cephalothorax by a sulcation forwardly curved. This portion is itself divided in two by a short longitudinal light-coloured groove, and is very densely and deeply punctured. No trace of lamellæ but the lamellar hairs persist far forward and are thick and slightly spatulate. Pseudostigmata large, situated at the top of large, mamillary projections. Pseudostigmatic organs rather long and rod-like, very slightly thickened at the ends, which are rough.

Interlamellar hairs small, spatulate, situated in front of the raised, punctured portions.

The *legs*, rough, very thick and heavy. Hairs thick, white, spatulate or clavate. Tibiæ short, scarcely, if at all, longer than the genua. Tarsi rather long, those of the 3rd and 4th pairs of legs twice as long as the tibiæ and of even width throughout; tarsi I and VI more thick and club-shaped. Tactile hairs of legs I and II long, nearly twice as long as the tarsi; one situated at the end of tibia I, one in the centre of tarsus I, two on tarsus II; tactile hairs of tarsi III and IV of moderate length. Claws monodactyle, very strong.

Abdomen very arched, sharply divided from the cephalothorax, with 6 rows of thick whiteish, spatulate hairs. Genital and anal plates near together, occupying the whole length of the ventral plate. Genital aperture very large, square, with rounded angles, broader than long, with 3 pairs of hairs. Anal aperture large, rectangular, nearly twice as long as broad, its length exceeding the width of the genital aperture, with 2 pairs of hairs.

Locality: No. 14, in damp moss. One specimen.

17. *Carabodes tridactylus* nov. spec.

(Pl. III, fig. 5, text-figs. 54, 55.)

Although the present species is tridactyle I refer it to the genus *Carabodes* as it undoubtedly seems to be most closely related to *C. labyrinthicus* MICII. [6, Pl. 21, fig. 1].

Length 0,63 mm. Breadth 0,49 mm.

Texture, rough. *Colour*, deep red-brown. The dorsal side of both cephalothorax and abdomen irregularly punctured and densely covered with small, hyalin, more or less perpendicular, raised dots.

Cephalothorax long, narrower than the abdomen and nearly in the same level, anteriorly bluntly pointed. Lamellæ rather thick, and narrow, almost horizontal plates with the same texture as the dorsal side; they run throughout their whole length in a slight curve towards each other, extend forwards almost to the tip of the cephalothorax, terminating in short cusps at the top of which the small, curved lamellar hairs are inserted.

Interlamellar hairs hairy, straight and blunt, situated as far from the middle as from the pseudostigmatic organs. Pseudostigmata large, lateral, much raised, pointing outward. Pseudostigmatic organs with slender peduncles curved outwards and backwards, and pyriform bare heads (Text-fig. 55).

First tectopodia very large, shaped like the lamellæ, plainly seen from dorsal aspect.

Legs. Coxæ III rough with the same texture as the dorsal side, flattened. Femora I and II with slender peduncles; femora III and IV flattened with high, longitudinal, ventral blades; genua I rather long with slender basis; genua II—IV short; tarsi and tibiæ I—IV (especially tibiæ IV) rather long with slender peduncles. All tibiæ and genua I with long tactile hairs. Claws tridactyle, slightly heterodactyle.

Abdomen a little longer than it is broad; posterior margin rounded, antero-lateral angles with a short, squared, flat projection; 4 rows of straight, blunt, hairy bristles on dorsum of abdomen; 3 pairs of small hairs round the hind margin.

Ventral side (Text-fig. 54). Texture the same as that of the dorsal side but not so raised. Genital and anal apertures large, occupying nearly the whole median part of the belly leaving between them a space only as long as $\frac{1}{3}$ of the length of



Fig. 54. *Carabodes tridactylus*, ventral view. 75 ×. Fig. 55. Pseudostigmatic organ. 620 ×.

the genital plate. Genital plate almost square, with rounded angles. Anal plate large, pyriform, nearly contiguous with the hind margin.

Locality: No. 14, in damp moss. One specimen.

18. *Notaspis antarctica* MICH.

1903. *Notaspis antarctica* MICHAEL. Résultats du Voyage du S. V. Belgica, Acarida, p. 2—5. Pl. II, figs. 1—11.

Localities: No. 2, 3, 4, 6, 7, 8 and 9.

19. *Notaspis Belgicæ* MICH.

1903. *Notaspis Belgicæ* MICHAEL op. cit., p. 5—6. Pl. II, figs. 12—19.

Locality: No. 3.

20. *Oribatula Nordenskjöldi* nov. spec.

(Pl. III, figs. 4 and 6, text-fig. 56.)

Average length 0,7 mm; length of abdomen 0,54 mm. Average breadth 0,40 mm.

Colour, chestnut brown. *Form*, oval, rounded posteriorly. *Texture*, smooth, but not polished.

Cephalothorax in the middle not distinctly demarcated from the abdomen, conical, with slightly rounded sides and median, anterior, small, rounded projection.



56.

Fig. 56. *Oribatula Nordenskjöldi*, side view.

75 > .

The *lamellæ* long, low, narrow blades, gradually narrowing towards both ends, without translamella or cusps, their proximal $\frac{1}{4}$ concealed under the pteromorphæ. Rostral hairs rather long, reaching beyond the tibiæ of the first pair of legs, slightly curved, not very near together. Lamellar hairs long, nearly as long as the cephalothorax, directed obliquely upwards. Interlamellar hairs still longer than the lamellar ones,

slightly curved and directed obliquely upwards and outwards, situated far from each other, near to the lamellæ. Interlamellar, lamellar and rostral hairs rather scarcely clothed with short adpressed hairs. Pseudostigmatic organs short with pyriform, bare heads on slender peduncles. Pseudostigmata concealed beneath the pteromorphæ.

Legs rather short; tarsi II—IV flattened, on the ventral side with a longitudinal, knife-shaped ridge. Femora I and II slightly longer than the tibiæ; femora III and IV slightly shorter. The median halves of epimera III and IV coalesced.

Claws monodactyle.

Abdomen oval, well rounded at the hind end. Notogaster not very arched. The pteromorphæ extend backwards to the middle of the abdomen, gradually narrowing (Text-fig. 56).

The anterior, slightly concave and the lateral margin form a nearly right angle, well rounded.

On the dorsal side, on the border between the central and the marginal portion is a band of irregular, rounded, white depressions, where the cuticle is thinner and where most probably some excretory pores are situated. Outside this band are situated 6 pairs of weak hairs and on the hind margin are two pairs of setiform, flexible hairs.

The genital aperture is small, oval, the ratio of length to breadth being as 5 to 3, situated far forward, between the epimera III and IV and projecting only with the last $\frac{3}{4}$ beyond epimera IV.

The anal aperture large, quadrangular, with rounded angles, situated far back.

The above described species seems to be most closely related to *Oribatula similis*, the only other member of the genus which is monodactyle; but it is easily recognized through its more elongated shape, the abdomen not being distinctly demarcated from the cephalothorax and the crateriform depressions of the abdomen.

Localities: No. 1 and 14.

21. *Damæus curtipes* nov. spec.¹⁾

(Pl. III, figs. 3 and 7.)

Length 0.55 mm.

Shape oval, pointed anteriorly, rounded posteriorly.

Cephalothorax long, being about $\frac{2}{5}$ of the entire length. Rostrum broad, bluntly pointed at the tip; dorsovertex arched, leaving a depressed, well demarcated band between it and the abdomen. Pseudostigmata dorsal, near together. Pseudostigmatic organs rather long (Pl. III, fig. 7), slightly recurved, with long, slender peduncles and lanceolate, hairy heads. No interlamellar hairs. Lamellar hairs persisting near the anterior margin of dorsovertex, although there are not any

¹⁾ After a sketch had been made with the help of the camera lucida the only specimen got smashed to pieces through an accident; this has prevented me from giving a more detailed description; at any rate the present description will be sufficient for purposes of identification.

lamellæ. From the stigmata towards the lamellar hairs there are a pair of parallel rows of small depressed areas.

No tectopodia. Legs of the usual shape, but not so long, nor are the joints so clavate as in those of many other species of the genus. Claws monodactyle, gradually increasing from 1st to 4th pair of legs.

Long tactile hairs on each of tibiæ I—IV and genua I and II.

Length of leg I 0,35 mm, IV 0,42 mm.

Abdomen very arched, without any markings; only two pairs of long hairs on the dorsal side and three pairs at the hind margin.

Locality: No. 14. One specimen.

Synopsis of the geographical distribution of the Acari of the Swedish South Polar Expedition.

	Antarctic region.					Subantarctic region.					
	South Shetland I.	Pantet I.	Mt. Bransfield.	Cape Rognemannrel.	Penguin-islet Orleans Strati.	Islet Orleans Strati.	Moss-I. Orleans Strati.	South-Georgia.	Observatory Island.	Falklands.	Gable I. Tierra del Fuego.
<i>Heterogamasus claviger</i> n. g., n. sp.	-	-	-	-	-	-	-	-	-	+	-
<i>Trachygamasus Ohlini</i> n. sp.	-	-	-	-	-	-	-	-	-	+	-
<i>Gamasellus Racovitzi</i> (TRT)	+	-	-	-	-	-	-	-	-	-	-
<i>Gamasiphis loricatus</i> n. sp.	-	-	-	-	-	-	-	-	-	+	-
<i>Hydrogamasus antarcticus</i> n. sp.	-	+	-	-	-	-	-	-	-	-	-
<i>Eulelaps grahamensis</i> n. sp.	-	-	+	-	-	-	-	-	-	-	-
<i>Zercon tuberculatus</i> n. sp.	-	-	+	-	-	-	-	-	-	-	-
<i>Tectopenthalodes villosus</i> (TRT)	+	+	-	-	-	-	-	-	-	-	-
<i>Rhagidia megalochela</i> n. sp.	-	-	-	-	-	-	-	-	+	-	-
<i>Bdella antarctica</i> n. sp.	-	-	-	-	-	-	+	-	-	-	-
<i>Erythraeus antarcticus</i> n. sp.	-	-	-	-	-	-	+	-	-	+	-
<i>Oribata antarctica</i> MICH.	-	-	-	-	-	-	+	-	-	-	-
> var <i>major</i> n. var	-	-	-	-	-	-	-	-	-	-	+
> <i>affinis</i> n. sp.	-	-	-	-	-	-	-	-	-	+	-
> <i>alata</i> HERM.	-	-	-	-	-	-	+	-	-	-	-
<i>Hermannia macronychus</i> n. sp.	-	-	-	-	-	-	-	+	-	-	-
<i>Carabodes tridactylus</i> n. sp.	-	-	-	-	-	-	-	+	-	-	-
<i>Notaspis antarctica</i> MICH.	+	-	+	+	+	+	-	+	-	-	-
> <i>Belgica</i> MICH.	-	-	-	-	+	-	-	-	-	-	-
<i>Oribatula Nordenskjeldi</i> n. sp.	+	-	-	-	-	-	-	-	+	-	-
<i>Damaeus curtipes</i> n. sp.	-	-	-	-	-	-	-	+	-	-	-

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Explanation of the plates.

Pl. I.

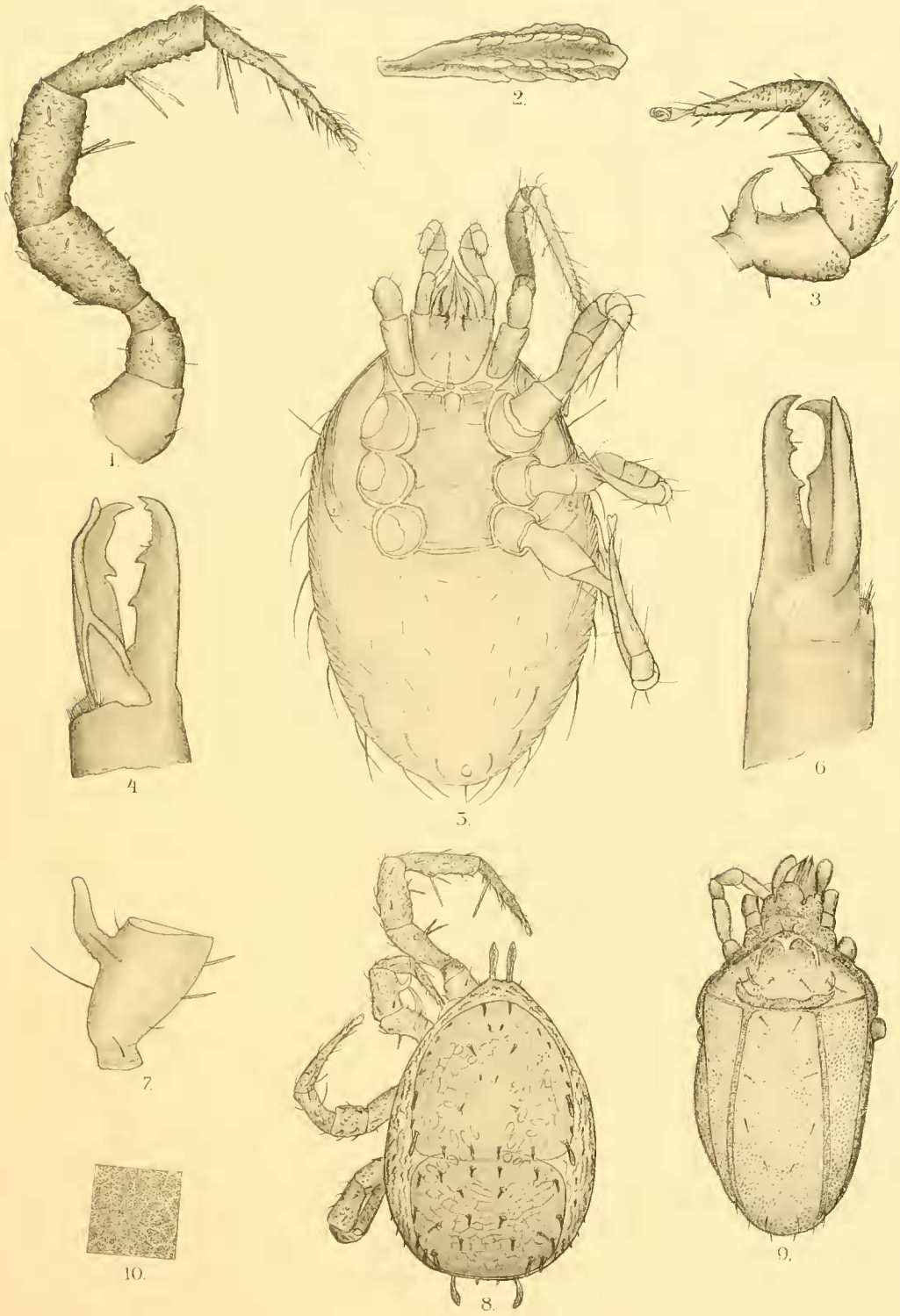
- Fig. 1. *Heterogamasus claviger*, adult ♂, 1st right leg seen from the outer side. 150×.
 Fig. 2. » » » » clavate hair from the posterior margin. 812×.
 Fig. 3. » » » » 2nd right leg seen from the inner side. 150×.
 Fig. 4. *Gamasiphis loricatus*, adult ♂, left mandible seen from the outer side. 310×.
 Fig. 5. » » » » ventral view. 75×.
 Fig. 6. *Heterogamasus claviger*, adult ♂, right mandible seen from the outer side.
 Fig. 7. *Gamasiphis loricatus*, adult ♂, right femur seen from the inner side. 150×.
 Fig. 8. *Heterogamasus claviger*, dorsal view. 75×.
 Fig. 9. *Tectopenthalodes villosus*, dorsal view. 75×.
 Fig. 10. » » » part of the dorsal cuticle.

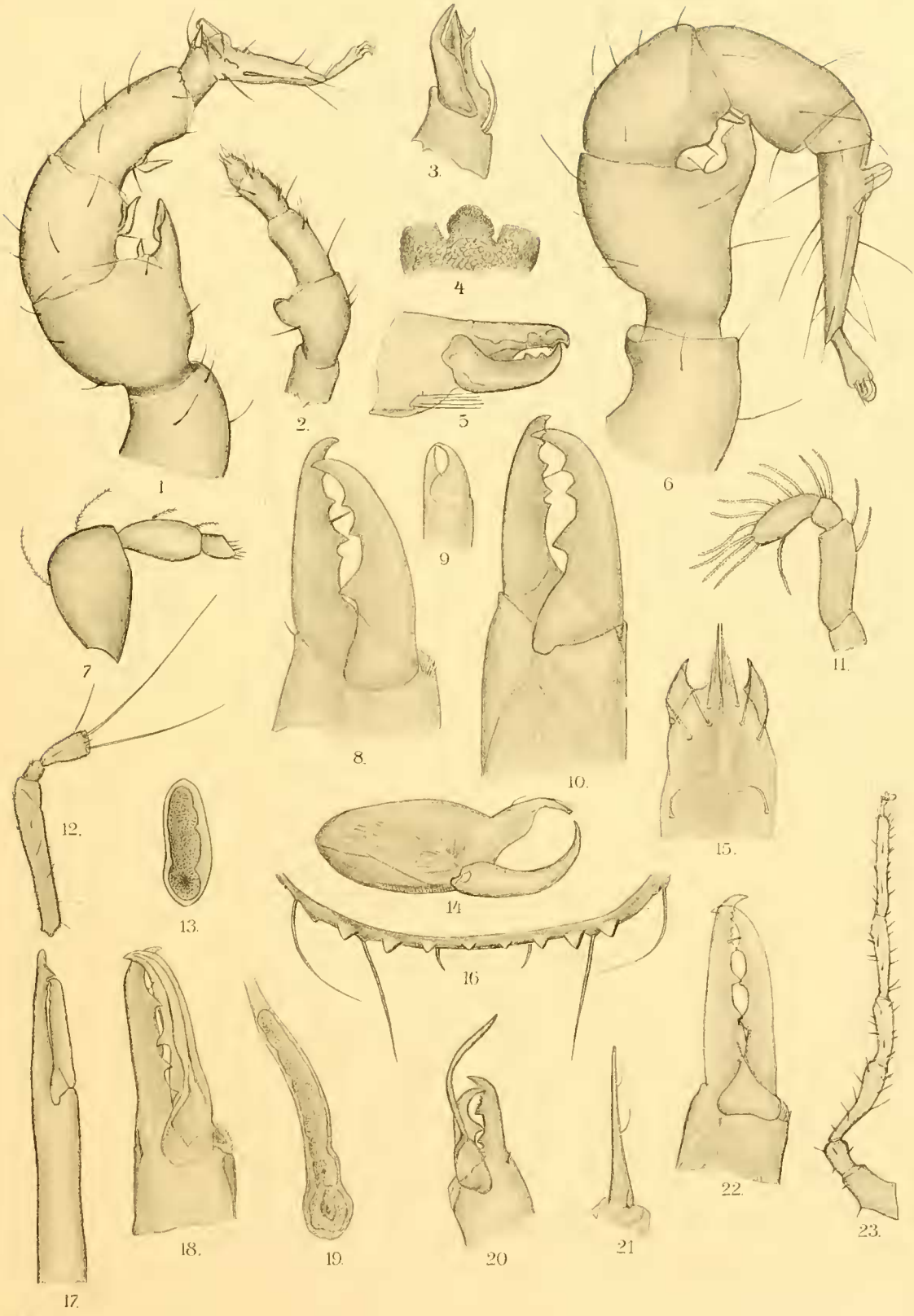
PL. II.

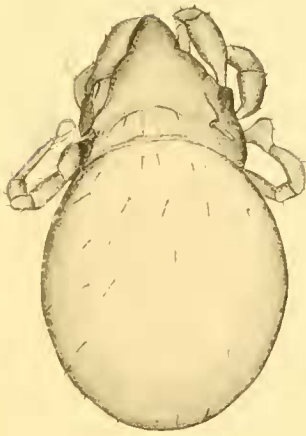
- Fig. 1. *Gamasellus Racovitzai*, adult ♂, 2nd right leg seen from the outer side. 150 ×.
Fig. 2. " " " " palp. 150 ×.
Fig. 3. *Tectopenthalodes villosus*, chela mandibuli, half ventral view. 620 ×.
Fig. 4. " " " " epirostral plate. 150 ×.
Fig. 5. *Laelaps (Eulaelaps) grahamensis*, adult ♀, chela mandibuli. 620 ×.
Fig. 6. *Hydrogamasus antarcticus*, adult ♂, 2nd right leg seen from the outer side. 150 ×.
Fig. 7. *Tectopenthalodes villosus*, palp. 310 ×.
Fig. 8. *Zercon tuberculatus*, nymphe, mandible. 620 ×.
Fig. 9. *Bdella antarctica*, chela mandibuli. 620 ×.
Fig. 10. *Gamasellus Racovitzai*, adult ♀, mandible. 310 ×.
Fig. 11. *Rhagidia antarctica*, palp. 310 ×.
Fig. 12. *Bdella antarctica*, palp. 75 ×.
Fig. 13. *Zercon tuberculatus*, left stigma and peritrema. 620 ×.
Fig. 14. *Rhagidia antarctica*, mandible. 310 ×.
Fig. 15. *Zercon tuberculatus*, nymphe, hypostoma. 620 ×.
Fig. 16. *Zercon tuberculatus*, nymphe, posterior margin. 310 ×.
Fig. 17. *Trachygamasus Ohlini*, nymphe, mandible. 620 ×.
Fig. 18. *Hydrogamasus antarcticus*, adult ♂, right mandible seen from the outer side. 310 ×.
Fig. 19. *Gamasellus Racovitzai*, adult ♂, left stigma and peritrema. 310 ×.
Fig. 20. " " " " " left mandible seen from the outer side. 150 ×.
Fig. 21. *Bdella antarctica*, right mandible, dorsal view. 75 ×.
Fig. 22. *Hydrogamasus antarcticus*, adult ♀, mandible. 310 ×.
Fig. 23. *Gamasellus Racovitzai*, adult ♂, 1st left leg seen from the outer side. 60 ×.

PL. III.

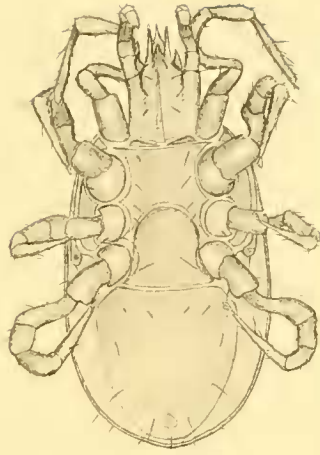
- Fig. 1. *Hermannia macronychus*, dorsal view. 43 ×.
Fig. 2. *Hydrogamasus antarcticus*, adult ♀, dorsal view. 60 ×.
Fig. 3. *Damæus curtipes*, dorsal view. 60 ×.
Fig. 4. *Oribatula Nordenskjöldi*, dorsal view. 75 ×.
Fig. 5. *Carabodes tridactylus*, dorsal view. 75 ×.
Fig. 6. *Oribatula Nordenskjöldi*, ventral view. 75 ×.
Fig. 7. *Damæus curtipes*, pseudostigmatic organ. 620 ×.
Fig. 8. *Laelaps (Eulaelaps) grahamensis*, dorsal shield. 60 ×.
Fig. 9. *Trachygamasus Ohlini*, nymphe, dorsal view. 30 ×.
Fig. 10. *Oribata affinis*, dorsal view. 60 ×.



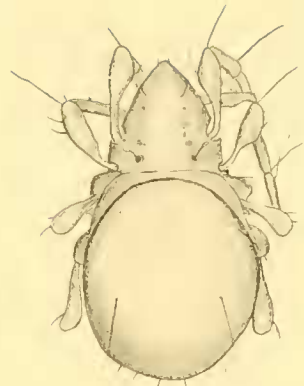




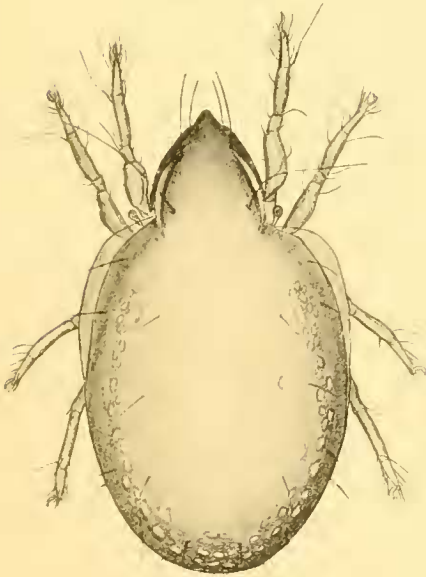
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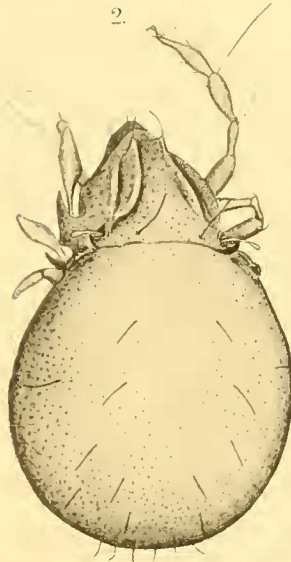
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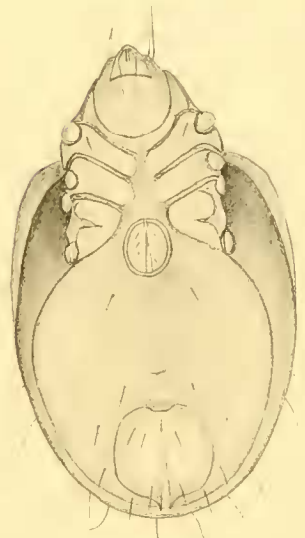
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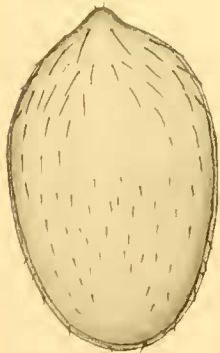
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6.



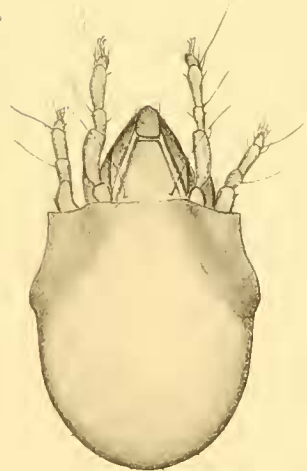
7.



8.



9.



10.